



APPLICATION FOR UNITED STATES LETTERS PATENT

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TITLE:

PRE-MEASURED PORTION PACKAGED FOR PRODUCING A  
BREWED BEVERAGE

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## CROSS REFERENCE TO RELATED APPLICATION

[1] This application claims the priority of German Patent Application No. DE 201 00 166.7, filed January 5, 2001, the subject matter of which is incorporated herein by reference.

## BACKGROUND OF THE INVENTION

[2] The present invention relates to a pre-measured portion package for producing a brewed beverage, comprising a container or receptacle filled with an aroma carrier such as coffee or tea. The container consists of a circumferential side wall, a bottom and a lid, wherein the lid is water-permeable, at least in some sections, and the bottom is designed at least in sections as a filter

[3] Pre-measured portion packages of the above type are known per se. The known pre-measured portion packages, through which the brewing water flows solely due to gravity, are produced from different materials that are in part water permeable and in part not water permeable and have a relatively complex design.

[4] Furthermore known are pre-measured portion packages for preparing a brewed beverage, for which pressure is required to force the brewing water through the pre-measured portion package. These pre-measured portion packages have the disadvantage that they can be used only in combination with correspondingly designed brewing equipment.

[5] It is the object of the present invention to create an easy to produce and cheap pre-measured portion package for preparing a brewed beverage using gravity.

#### SUMMARY OF THE INVENTION

[6] The above object generally is solved according to the invention by using a deep-drawing method to form the side wall and the bottom as one piece from a plastic non-woven material, e.g., a plastic fiber mat, or plastic/paper blend or composite capable of filtering. At least the side-wall area is compacted enough to be water-impermeable while the lid is also produced from a plastic non-woven material or plastic/paper blend capable of filtering and is dense enough in the circumferential edge region to be water

impermeable. The lid is joined to the upper edge of the side wall, such that it seals tightly.

[7] A pre-measured portion package of this type is produced only with a single starting material, namely a plastic non-woven material or plastic/paper blend capable of filtering, and has a relatively simple design. The pre-measured portion package consists of two individual parts, namely a pot-shaped lower part, forming the bottom and side wall, and a lid closing off the lower part of the package.

[8] The deep-drawing technique is used to produce the lower part of the plastic non-woven material or plastic/paper blend capable of filtering in a single operational step. The lower part is compacted in the side-wall area such that this side-wall area becomes water impermeable. At the same time, the side-wall area is stabilized as a result of the compacting, thus making the complete pre-measured portion package easy to handle.

[9] The lid is also manufactured from a plastic non-woven material or plastic/paper blend capable of filtering, wherein only the circumferential edge region of the lid is

compacted such that it becomes water impermeable. After filling the bottom part with an aroma carrier, the lid is fitted onto the lower part and connected to it such that it seals, which can be done thermally.

[10] The use of a plastic/paper blend is advantageous, particularly from an ecological point of view, since this material contains primarily renewable raw material (cell material).

[11] On the whole, a pre-measured portion package according to the invention can be produced extremely cheaply and is highly suitable for practical use since the brewing water for leaching out the aroma carrier flows only as a result of gravity through the pre-measured portion package. No special brewing equipment is therefore required when using this pre-measured portion package. Additional features and/or modifications of the invention are disclosed and discussed.

[12] One exemplary embodiment of the invention is shown in the attached drawings and is described in further detail below.

## BRIEF DESCRIPTION OF THE DRAWINGS

[13] Figure 1 is a cross section through a lower part for a pre-measured portion package according to the invention, as well as through a tool for producing a lower part of this type.

[14] Figure 2 is a schematic illustration showing a size comparison between the starting material for producing the lower part before and after compacting in the tool according to Figure 1.

[15] Figure 3 is a cross-sectional view through the lid of a pre-measured portion package according to the invention, essentially corresponding to Figure 1, as well as through a tool for producing this lid.

[16] Figure 4 is a cross section through a complete pre-measured portion package according to the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[17] Figure 1 shows a schematic sectional view of a deep-drawing tool for producing a lower part 1 of a pre-measured portion package 2 for preparing a brewed beverage. The deep-drawing tool comprises a bottom die 3 and a top die 4, wherein at least the bottom die 3 is provided with a heater 5.

[18] The lower part 1 of a pre-measured portion package 2 according to the invention is produced in this tool.

[19] The starting material for producing the lower part 1 is a plastic non-woven material 6, e.g., a plastic fiber mat, that is water permissible and is capable of filtering, with a predetermined material thickness D (see Fig. 2). Alternatively, a plastic/paper blend, composite or mixture can also be used.

[20] According to Figure 1, the lower part 1 is formed in the tool by using the deep-drawing technique for producing a respective material section made from this plastic non-woven material 6. The lower part consists of a

circumferential side wall 7 and a bottom 8. Thus, the two portions 7 and 8 of the lower package part 1 are produced as one piece, i.e., a unitary structure from the same piece of material, and the side-wall area of this lower part 1 is compacted during the production such that at least the complete side-wall area becomes water impermeable. The exemplary embodiment shows a strongly deformed, compacted ring-shaped area 8a of bottom 8, which adjoins the side wall 7. On the other hand, the major portion of the bottom 8 is practically not deformed at all and retains its filtering characteristics because the bottom die is provided with a corresponding recess 9.

[21] Figure 2 clearly shows that the plastic non-woven material 6 is compacted to a material thickness of D1, which amounts to only a fraction of the original material thickness D.

[22] As a result of the enormous compacting under the effect of supplied heat and the pressure from top die 4, the compacted regions (side wall 7 and bottom edge region 8a) on the one hand become water impermeable and, on the other hand, obtain a mostly stable form.



[23] Figure 3 shows that a lid 10, which is also produced from the plastic non-woven material 6 or plastic/paper composite material, is produced inside a bottom die 3a with the aid of a top die 4a. In the process, only the circumferential edge region 11 of lid 10 is compacted to become water impermeable, whereas the center region 12 of the lid 10 remains practically without deformation and thus water permeable because of the recess in the bottom die 3a.

[24] Following completion of the lower part 1, this part is filled with an aroma carrier 13, e.g., coffee or tea. The lower part 1 is subsequently closed off with the lid 10. For this, the lid 10 advantageously rests on a outwardly directed circumferential flange 14 that forms the upper edge of the lower part 1, and the lid 10 is thermally welded to this circumferential flange 14, thus tightly sealing the lower part 1.

[25] Brewing water for preparing a brewed beverage thus can flow through the practically non-deformed area 12 of the lid 10 and into the pre-measured portion package 2. As a result of gravity, this brewing water saturates the aroma

carrier 13 as well as the bottom 8 region capable of filtering. Since the side wall 7 of the container, consisting of lower part 1 and lid 10, is practically water impermeable, brewing water cannot exit the container in an uncontrolled and undesirable manner. Rather, the brewing water must flow completely through the aroma carrier 13.

[26] The pre-measured portion package can be produced easily and cheaply in the manner as described in the above and is highly suitable for practical use since no special equipment is required for its use.

[27] A polymer plastic non-woven material 6 is preferably used for producing the pre-measured portion package 2 since this material is particularly suitable for the production under the effect of heat and pressure and also permits an easy thermal fusing of lower part 12 and the lid 10.

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[28] The invention now being fully described, it will be apparent to one of ordinary skill in the art that many changes and modifications can be made thereto without departing from the spirit or scope of the invention as set forth herein.